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HINTS ON
ARCHITECTURAL
DRAUGHTSMANSHIP

By
G·W·TUXFORD·HALLATT
Architect

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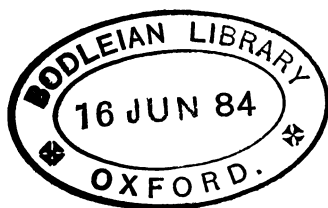
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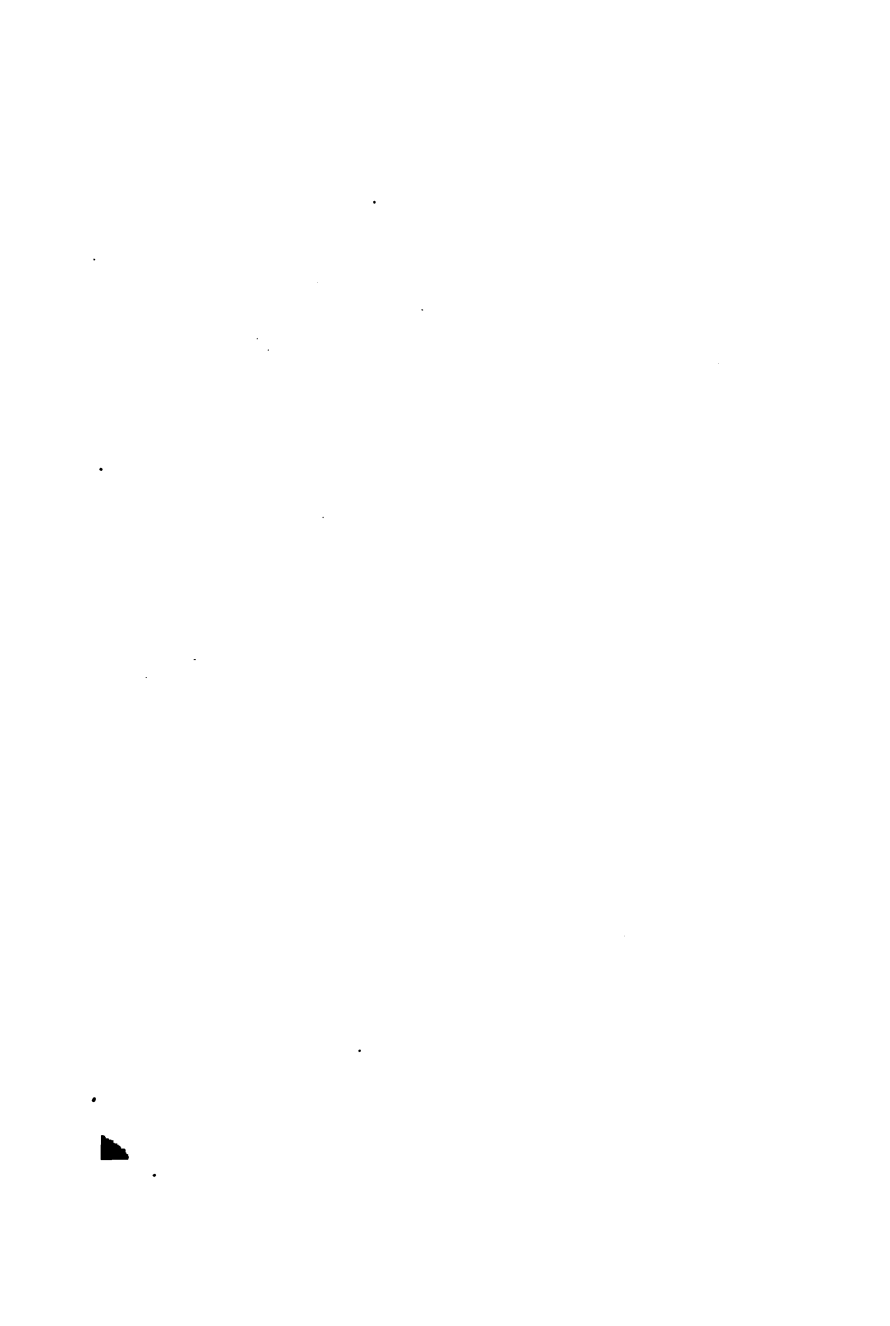
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P R E F A C E.



THE hints contained in this little book are specially designed to meet the wants of those who are actively engaged in the duties of an architect's drawing office. They are the result of actual practical experience. It is therefore hoped they will be found useful, not only to the student and draughtsman, but also to those who have recently launched out into the actual practice of their profession.



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HINTS

ON

ARCHITECTURAL DRAUGHTSMANSHIP.

INTRODUCTION.

THE success of an architect is now, to a much greater extent than formerly, dependent upon his skill as a draughtsman.

Competitions, whether for good or evil we need not now stay to inquire, are, and will probably for a very long time to come, continue to be, the chief means through which he must seek to obtain all the larger, and many of the smaller, prizes which the profession has to offer him.

Under this system effective drawing is of paramount importance; yet how few attain to even passable excellence in the art of setting off a design to the best advantage. What an immense amount of loose, careless, coarse, inartistic, inaccurate drawing crops up at every

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competition, and how indescribably bad is much of the work that proceeds from even the better kind of London drawing offices in the ordinary course of everyday business.

Surely there must be something radically wrong about the system which produces such unsatisfactory results. What in this country is the method by which a young architect is usually prepared for this all-important part of the practical duties of his profession? As a boy he may, or may not, have been taught drawing at school. It matters little whether he has or not, for it is tolerably certain that he will have gained nothing by it even if he has, for anything more useless as a means for training the hand and eye of an embryo architect than the copies usually placed before him for imitation at most scholastic establishments, it is impossible to conceive. Probably the nearest approach to the architectural has been that everlastingly repeated thatched cottage, manifesting unmistakable signs of imminent disintegration, with consequent destruction to the untidy female represented in attendance upon the disconsolate cow and disreputable pig.

A few astonishing works of art of this kind are mostly all there is to show for the time and money expended on learning drawing at school. The boy has

learned nothing but what it will be much to his interest to unlearn without delay. Let us suppose him to have survived the baneful effects of this sort of teaching, and to have convinced his friends, the lady ones at any rate, on the strength of his having constructed a mud castle in the back garden, or something of that sort, that he is a kind of mute, inglorious architect, destined in the near future to eclipse the fame of Sir Christopher Wren, Sir Gilbert Scott, and all the others. It has been decided in family conclave that as Nature had so clearly marked him out for an architect (*vide* the mud castle), it would never do to oppose so respectable an authority ; he must therefore be articulated at once.

Paterfamilias, after infinite trouble of course, discovers an architect disposed to consent to receive a premium and a pupil. The youth is articulated, and begins his student life. He is perhaps located in a back office, with (say) two other pupils like himself, one of whom knows next to nothing, and the other considerably less ; or perhaps, if he is more fortunate, he shares the room with a paid assistant, who considers it no part of his duty to instruct young pupils, who might, if brought on too rapidly, supplant him in the future. The principal himself has little or no time, in the midst of his multifarious duties and frequent

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absences from office, to devote to anything like direct oral teaching. Thus it happens that the student is left pretty much to his own resources; if disposed to do nothing beyond the perfunctory performance of the ordinary routine duties of the office, he may make a passably good tracer and copyist, but it is next to impossible for him to become an accomplished draughtsman.

Time passes, even in an architect's office, and by-and-by the pupil finds he has approached the end of his article clerkship, and is now entitled to offer his valuable services as a paid assistant, and accordingly he forthwith proceeds to join the host of incompetent applicants for appointments which Fate has deservedly destined for others better qualified to hold them. There is, he finds, no great rush of excited architects, anxious to secure, at any price, his assistance. In course of time he is brought to see that his attainments and his skill are vastly below what they should be to enable him to obtain any measure of success.

It is the superabundance of persons of this class, utterly unqualified for the duties they would undertake, that causes such outcry against the overcrowded state of the profession. Doubtless it is overcrowded to some extent; indeed, it would be interesting to know *what* profession is not, nowadays; but in the light of

a recent newspaper discussion on the question "What to do with our boys," it is important to remember that this overcrowding is more apparent than real. As a fact, we believe, the number of able, accomplished assistants is not equal to the demand. Certain it is that architects find it by no means easy to obtain such, whereas a legion of half, or quarter educated persons, possessed of nothing but the most elementary knowledge of, or skill in, the art they profess, swarm throughout the land. Everything such persons are called upon to do has to be done under the immediate direction of the principal, or it will be done wrong, and cause vexation, or worse.

It will not do, of course, to lay *all* to the system, though it is bad enough in all conscience. Very much of the fault is due to the ever increasing pleasure-taking propensities of people in their student days. If a person choose to spend every moment in which he can escape from office work in bicycling, boating, cricketing, shooting, fishing, tennis, and other play, he cannot possibly expect to become proficient in his profession, and consequently does not deserve success.

Hitherto we have been considering the effect of the existing method of architectural education, as a means for producing in a student of average ability something approaching to proficiency as a draughtsman,

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and we find in it very little which, taken alone, can reasonably be expected to have that result, except in comparatively rare cases, where either the principal or his pupil happen to be possessed of much more than the average talent and industry. Our system, or rather want of system, is in fact excellently adapted for the manufacture of mediocrity and incompetence.

Enough has now been said to show that the student, if he has in him the least spark of ambition, the smallest desire to excel, will have to supplement his office studies, if such they can be called, by other means, or he will never, unless possessed of very great genius indeed, make himself master of the art of architectural drawing.

There are exceptions to every rule; and we know well that many among the younger members of the profession, students and others, are fully alive to their deficiencies as draughtsmen, and have too much spirit to rest satisfied with their meagre attainments. To such the following hints, founded upon practical experience, will, it is hoped, be of some assistance, by directing attention to the methods best calculated to produce the most satisfactory results in the shortest space of time.

FREEHAND DRAWING.

ALTHOUGH it will be necessary, for the sake of clearness, and to avoid as far as possible repetition, to treat of the various branches of our subject in something like their natural sequence, it is not to be inferred that we insist upon the student following this order too closely ; rather will he find it to his advantage to take up two or more subjects, and work on them alternately ; the one will act as a foil to the other.

We are sure that in every case architects will always be found ready to afford all reasonable facilities to their pupils to carry on their studies during office hours, when not engaged in actual work.

Too much attention cannot possibly be given to *Freehand Drawing*. It is the foundation of all good drawing of every kind ; without its aid expert architectural draughtsmanship cannot be attained ; by its means the eye may be trained to see correctly, and the hand to follow readily the dictates of the eye. We must therefore insist upon a great deal of time and pains being devoted to it, not only at the outset, but all through our studies.

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As we desire to make these suggestions as thoroughly practical as we can, we will proceed to indicate our idea as to the best way of practising freehand drawing, having always in view the desirability of, as far as possible, making it assist in adding to our knowledge of architectural forms and details, though that, of course, is not our main object.

The first essential in freehand drawing is to observe accurately the form of the object to be copied, so that it may remain fixed on the retina after the eye is withdrawn and directed to the paper. Many false strokes would be avoided were pains taken to look well before endeavouring to follow with the pencil. Then, with the image of so much of the object as can be conveniently dealt with at one time impressed on the mind's eye, endeavour at once to reproduce it by a single stroke of the pencil; the great object aimed at being the representation of the outline in as few lines and with as few erasures as possible, and to dispense with indiarubber altogether.

For some time attention should be devoted exclusively to good figure sculpture, or plaster casts, if originals be not available, bearing in mind that it is the outline only with which the student is at present concerned. He will therefore avoid all shading. This *should be continued* until it is found to be easy to

depict the contour of a bust or figure with rapidity and accuracy. To do this perfectly will require much practice, but will amply repay any amount of time and trouble, as almost everything else will seem easy after it.

Attention may then be directed with great advantage to plant forms, especially such as lend themselves easily to architectural decoration. Here again it will be well to attend at this stage to outline only, rendered in as few strokes and as rapidly as possible. For this kind of work a soft pencil will be found to conduce to freedom of touch and rapidity of execution. Even long after it is felt that the hand has been brought into subjection to the eye, and rendered capable of recording with ease its impressions, it will still be found of the utmost utility to practise from time to time, as much as may be, the sketching of animal life, more especially the human figure, with a view to increase the control over the hand and preserve the power of rapidly depicting forms of beauty so entirely opposed to, and therefore corrections of, the too common merely geometrical elements in design, which without such correction is apt to become in the highest degree stiff and formal.

The study of freehand drawing may now be carried a step further in the direction of pure architectural

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drawing. Wherever the student reside he will, if in England, have little difficulty in finding within easy reach good examples of ancient architecture; those who live in London have in and about Westminster Abbey an inexhaustible storehouse from which to select subjects for sketches. It will be well at first to take in hand only so much as can be dealt with at a single sitting; in other words, it will be found best to confine the attention to fragmentary detail, and then gradually extend the scale of the subjects. This will be more likely to lead to accuracy of treatment than the general sketching of a building as a whole. It must be borne in mind that the kind of sketching from existing buildings, of which we are now treating, is intended solely as an exercise in freehand drawing, having nothing to do with sketches made for the purpose of being reproduced as measured drawings, of which we shall, however, have something to say further on.

As the object is the training of the hand to draw architectural forms without the aid of any instrument save the pencil or the pen, the great point will be to endeavour to draw clearly, definitely, and once for all, without ever going over the same line twice. We know well that this is by no means easy, but still it should be the thing aimed at. Following the study of detail

such as foliated caps, groups of mouldings, vaulting, window tracery, &c., will come free sketches of large masses of building. In these, clearness, simplicity, accuracy of outline are all-important.

There will be some advantage in using indelible brown ink, instead of a pencil, in freehand sketching from buildings, because the erasure of the lines when once made being impossible, the student will be less likely to commit himself to hasty, tentative strokes. In quitting the subject of freehand drawing, we must be permitted again to impress upon our readers its immense importance, and therefore the absolute necessity of keeping the hand in by continuous practice.

PLANS, ELEVATIONS, AND SECTIONS.

IN technical drawing, as applied to architecture, the Continental schools, especially the French, are undoubtedly far in advance of the English. If this be doubted, let the reader take the very first opportunity he can of visiting the architectural galleries of the Salon, or, failing that, let him procure such publications as the '*Moniteur des Architectes*,' or the '*Revue Générale de l'Architecture*,' or any of the numerous magnificent, profusely illustrated books which have proceeded from the French press, such, for example, as that superb work, Letarouilly's '*Edifices de Rome Moderne*,' and all doubts as to the truth of our remark will speedily vanish. We have literally nothing in England to compare with such books. It cannot be doubted that they represent the habitual style in which French architects get up their drawings.

While we are upon this point, it may be well to observe that practically all nations, except the English, acknowledge the lead of the French in this matter. England alone stands out, and prefers a style of her *own*. Now, if it could be shown that there was the

remotest reason for supposing that the English style of drawing is in any way better than that which we have said is so generally practised on the Continent, then, of course, we should see no reason for change; but we do not believe that the style now in vogue in this country, so far as it differs from that of the French, and the Continent generally, is better; on the contrary, we think that it is capable of very great improvement indeed. Especially would be reprobated its prevailing coarseness, looseness, and inaccuracies; mostly the result of a vain struggle after the picturesque.

Much bad drawing in these days is the result of the teaching of certain ultra-medievalists of what we may call the middle period of the Gothic revival. In the early part of the movement, that characterised by the splendid works of the elder Pugin, we see little to complain of: on the contrary, nothing can exceed the accuracy and refinement of the plates in his 'Examples,' and in his book on the Architecture of Normandy. But after Pugin's time a school of architects, steeped in medieval lore, having all the qualifications for drawing well, chose to draw ill, for no better reason than that their medieval forefathers drew badly, forgetting that they only did so because they could do no better.

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So it is, whenever we give ourselves up too exclusively to mere imitation in art, or in anything else for that matter, we are inevitably led to copy the bad as well as the good: sometimes only the former, to the exclusion of the latter. Many of these were men of real talent. As we have said, they could have done better had they liked; but, unfortunately, so soon as Gothic became completely fashionable, a host of poor imitators sprung up, and of course they copied their betters' defects much more than their excellences, and so it has become common to get up drawings in the rough and ready way now in vogue.

We cannot here discuss the effect of so much bad drawing upon architecture itself, except to remark that the evil effect of this coarse, rough drawing is abundantly seen in the so general absence of refinement in details.

English architecture is now in a transition state. There are many signs of a revulsion of feeling in favour of some modified form of the modern European style, founded on the Italian. The at present fashionable Queen Anne style (why so called it is difficult to say; for certain it is, poor ill-used Queen Anne would fail to recognise it as like anything with which she was acquainted in her time) is only a step in that *direction*. Gothic is on the wane, and has been for

some time. It will be well for us to be prepared for this change. The return to the modern style of architecture will inevitably result in a return to the modern style of drawing: perhaps in a very much shorter time than most people think, for fashion changes rapidly in these days. We shall then be called upon to produce drawings of a very different kind indeed. Those who have not prepared themselves for the change will have to give place to those who have foreseen the necessity of qualifying themselves for the higher demands which will be made upon their talents as draughtsmen.

It must not, however, be supposed that they will have to wait till then before experiencing the full benefits of a systematic study of, and consequent improvement in, their art. They will probably find it remunerative from the very first, as tending to raise them to a higher status in the profession.

One other point it may be well to allude to in this place, that is,—that, unlike the architects, the civil engineers of England, who have deservedly won for themselves so high a reputation, have all along continued to use the style of drawing in vogue on the Continent.

It is strong testimony in favour of our view that the method is the right one, when we find not only all

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other architects throughout the world, but also even our own engineers adopting it.

What are the chief characteristics of a good set of working or contract drawings? First, they must be clear and intelligible; there must be no possibility of their meaning being mistaken; there should be as near an approach as can be to mathematical accuracy; figured and measured scale dimensions in perfect accord; the lines fine, to enable measurements to be taken off accurately; the various materials will be indicated by corresponding tints, somewhat lightly laid on; the explanatory writing and figuring perfectly legible; there will also be a complete absence of anything like elaborate marginal lines, or other fussy ornament; in short, these being essentially practical business drawings, clearness and accuracy will be of the first importance.

Let us take the plans and sections first.

How is the student to extricate himself from the careless and rough habits against which we are protesting so often? Clearly, unless he be very exceptionally placed indeed, he cannot hope to do it by simply copying the plans set before him in the course of ordinary office business. He will have to adopt some other course. We would suggest two.

Let him possess himself of, or obtain access to, one

or more of the French works indicated above—say, for instance, the latest volume of the ‘*Moniteur des Architectes*,’ or the ‘*Revue*,’ not by any means for the purpose of simply copying the plates, but in order to observe closely how these things should be done. Then let him select some unoccupied building to which he can have daily or frequent access. In the case of a young pupil an ordinary house would do; those more advanced must select a building of a more complicated kind. Make a careful measured sketch, and plot with all the most extreme care and accuracy of which he is capable, the plans of the different floors, sections, &c., following in the most minute particulars the style and manner of drawing contained in the works recommended.

Let the whole thing be done throughout on the principle that a single building, even if only a small villa, or a little village church, so dealt with, and so drawn, will make a very great difference in his style of draughtsmanship in a surprisingly short time.

It is needless to say that no one could go through such an exercise without learning a great deal about construction, and as very few students or assistants know too much about that, no harm will be done if it have that result.

Of course, the ambitious student would not rest

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satisfied with measuring and plotting the plans of one building only; he would, after having completed one such accurate set of plans, proceed with larger and more complex buildings of various kinds.

If his selection is an ecclesiastical subject, he will do well to procure Pugin's 'Examples;' constant reference to this will keep him up to the mark, as he will be ashamed to do his work in a slovenly manner after inspecting such models of precision.

In dealing with elevations, almost the same method should be adopted. The joints of masonry must be included in the sketches.

Of course, in the case of large churches, lofty towers, &c., the student must not be expected to make such a complete set of plans, sections, and elevations as Pugin did, with the aid of his army of assistants, and with the help of scaffolding. In such cases a portion of the building only, as far as the elevation is concerned, will answer his purpose quite well, only such portion, however small, must be perfect as far as it goes.

Attention should not be too exclusively given to buildings of one style. Many a person can get out a very respectable set of plans on the stock model of a church, who would be completely nonplussed if set to work on a theatre or concert-hall.

No set of plans will be complete without details

properly drawn to a large scale. There is no reason why even these should be done roughly, merely because they are large. An indelible ink pencil is sometimes found to answer well for details.

A few sets of drawings made in the way here suggested, from careful measurements of existing buildings, and drawn with all the accuracy and care of which the young student is capable, may be of immense service to him one way or another, directly and indirectly. In plotting the plans it is well to avoid using a very hard pencil, as the heavy pressure of the hard point on the paper spoils its surface, and makes the after process of inking in with neatness much more difficult.

In tinting elevations (they never should be elaborately coloured), it ought to be borne in mind that anything beyond the mere washes of tint requisite to make apparent the various materials is distinctly out of place. Pictorial effects must be left for perspectives. The practice of leaving a slight interval of white paper between the corner of a building or projection upon which the light comes (the left hand usually) and the tint is a good one; it brightens up a drawing immensely.

Let us suppose the reader to have received instructions to prepare a set of plans for some large building:

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say, for example, a public hall, to seat about two thousand persons, with all the usual and some special adjuncts. We propose to accompany him throughout their preparation, from the rough pencil sketch down to the completion. In doing so, we hope now and again to scatter such hints and suggestions as we believe will be most likely to be really useful, omitting all which we have the right to expect him to know, assuming that he has followed our recommendations and advice as given above. In this way we hope we shall be able to make our observations in an orderly and intelligible manner.

Although a plan of the site will probably have been provided and sent with the instructions, it may still be necessary to visit the spot and take sketches of the surroundings, so far as they are likely to affect the design of the proposed building. It may also be well to visit, before finally deciding on the design, other buildings of a like kind. Here the power of sketching, acquired in the way we have advised, will come in extremely useful, as enabling the reader to record with rapidity and precision anything either in planning or design that may strike him as suggestive or valuable; not, it is needless to say, with a view to the reproduction as his own of anything in the way of design. It is no part of our duty here to advise on

questions of design, therefore it will be distinctly understood that our hints refer to drawing only.

The hall is to contain, say, a large assembly-room, suitable for political and other meetings, balls, concerts, &c., with accommodation for an organ and orchestra, a certain number of dressing and retiring rooms, a refreshment bar, and a room or two for board or committee meetings, and rooms for the care-taker in the basement. We merely give the above particulars to show what kind of a building it is we have in our eye.

We will suppose the general arrangement has been sketched tentatively on the plan of site, and the scheme so far advanced as to admit of a start being made with the actual drawings. Even when it is thought an idea has been hit upon likely to answer, it will not be advisable to make this sketch anything but a light outline, as further consideration when the proper drawings are begun may make it necessary to proceed on totally different lines. We therefore advise that all preliminary drawings be done in pencil only. Assuming that after full consideration the general arrangement of the different parts of the structure has been finally determined upon, it will now be time to commence the preparation of the general plans.

It may be well to pause here, and say how necessary

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it is that the draughtsman should be provided with a really good set of instruments, and that the drawing paper should not only be of good quality, but should be properly stretched on the boards. Strange as it may seem, very few people understand exactly how this last simple operation should be performed. Nine out of ten at least are prone to deluge the sheet of paper with water. This reduces it to a more or less sodden condition, anything but conducive to clear drawing. Only so much water should be used in the damping process as will suffice to make the paper expand to the necessary degree. Good strong shoe-maker's paste is the best and cleanest substance to use as an adhesive ; it is better than glue, not only as being cleaner, but because it does not get sticky under the hand, if any small quantity protrude beyond the edge of the paper, in hot weather.

For general purposes, Whatman's unpressed double elephant drawing paper may be considered best. The pencils should be H or HH, according to the scale of the drawings. Care must be taken to use only such as admit of easy erasure. If the pencil is so hard as to require to be forced into the paper in order to make a clearly visible mark, it should at once be discarded, as the inevitable consequence of using such things is *that* a multitude of little hollows or sinkings are

formed, over which the drawing pen cannot be expected to work well.

Tee and set squares are best made of pear wood, as they admit of the pencil lines being better seen than when those of dark wood are employed. They have another advantage: being of light colour, dust and dirt are easily perceived, and can be removed in time to prevent mischief in drawing. The roller parallels are much more convenient than those of the ordinary form. Vulcanised india-rubber should never be used except for cleaning-up purposes, as it rubs up and completely ruins the surface of the paper; the ordinary bottle india-rubber is the only kind that should be used in drawing. It is scarcely necessary to insist upon having good square, unwarped boards to work upon.

A word as to light, and a caution consequent thereon. Most people imagine that for drawing purposes one cannot have too much light; this is a great mistake. Too much light is worse than too little; it will certainly produce more serious results. With a due and moderate amount of light the eye will require little rest; but if drawing under too strong a glare be persisted in for long, the eyesight will be irretrievably ruined.

By the bye, architects need to be reminded of this sometimes in planning school buildings. As a rule,

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too, school-boards err very much in this respect ; they judge of the children's eyes, which, on entrance into the school, are for the most part perfectly strong and healthy, and require little light, by their own somewhat elderly organs of vision, which require, it may be, a great deal of illumination, and the poor children suffer from ophthalmia in consequence. In an office where the window light is too strong, a blue blind of thick material may be used to destroy the glare. It should be drawn down to the level of the draughtsman's eyes—that is, if the drawing-desk be immediately in front of the window, as is usually the case ; the object being the getting the light on the drawing in just such quantity as is felt to be most conducive to comfort, and restful to the eye.

One other remark, and we will quit optics. It is well to have the artificial light, of whatever kind it may be, well above the level of the eyes, or injury will result. If possible, avoid the use of gas ; a good paraffin or colza oil lamp is the best light we can have, pending the general introduction into offices of the incandescent electric light, which would be a vast deal better still.

A word as to the seat. As sometimes the body must be stretched half over the desk, and at others the hand *is engaged* close to the edge of the desk, it stands to

reason that the seat ought to be capable of being raised and lowered accordingly. A stool made on the ordinary music-stool principle will be found calculated to prevent a good deal of unnecessary compression of the chest.

Though we are conscious we are straying a little from our subject, perhaps we shall be permitted to add just one more hygienic hint, and that is, that as in the act of drawing for a long time together there must of necessity be a certain amount of bending, and consequent compression of the chest, whatever arrangements and precautions we may adopt, it is very necessary that the habit of walking as erect as possible should be maintained when in the open air, and the keeping oneself from anything approaching to bending when not engaged in work which necessitates it. If this habit be acquired and maintained, no injury need be feared to the lungs, &c., from the practice of much drawing.

A sufficient number of sheets of paper should be stretched to allow of the whole of the general plans, consisting of the basement, ground-floor, and gallery plans, the sections and elevations being proceeded with simultaneously. So soon as the principal floor plan has been outlined, and the general arrangement determined, the basement and the gallery plans will

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be taken in hand, and carried on sufficiently far to set all doubts at rest as to the practicability of the arrangements of the other floors. In like manner, the sections and the elevations will proceed as far as possible together. It is a very common mistake to endeavour almost to finish one drawing—say, the elevation, or the ground plan—before beginning the others. This method is a very bad one, and inevitably leads to much vexatious undoing and redoing of work.

We repeat our advice, that all should proceed simultaneously. Further than that, nothing should be inked in until the whole of the set are completed in pencil, for an alteration may at any time be found to be desirable in one drawing which may affect all the rest. Nothing is so unsatisfactory as having to undo the work supposed to be completed; it is not only a waste of time, but shows that the work is being done badly.

The course of study we have advised above will, if carried out, have the effect of preventing many of the inaccuracies of which inexperienced persons are so frequently guilty. Every endeavour must be made to avoid slurring over, by indistinct drawing, those little difficulties of construction which it is the duty of the architect to clear away.

It is no part of our task to treat of the strength of

materials, yet we may remark that a careful working-out of many of the problems of this kind by the geometric method is often of the greatest possible service: though not pretending to anything like the accuracy of a mathematical calculation, it is still very advantageous, being, so far as it goes, the more sure method: gross error is next to impossible, if the drawing be as careful as it should be.

It will be understood we are now referring chiefly to questions involving decisions as to thickness of walls to carry certain weights, diameter of columns, &c. We must not travel further into this question, or we shall again be found straying.

As soon as all the plans, sections, and elevations are so far advanced as to render it certain that they will thoroughly fit each other in every respect, they should be taken one by one, beginning at the basement, and working up to the ground and gallery plans, sections, and elevations, and completely finished off in pencil.

Until this has been done, not the least stroke of inking in must be commenced. Arrived at this point, the drawings must be rigorously examined, and if considered incapable of further improvement, may now be inked in. By all means use good Indian ink; the bad will cause nothing but vexation of spirit.

By good we do not necessarily mean the more ex-

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pensive kinds. Some of these are by no means the best for the architect's use, as they are very apt to run where coloured over; though it must not be supposed that this is always due to the quality of the ink; much depends upon the way in which it is prepared. It is too often the practice, when fresh ink is required to be mixed, to rub up the fresh supply in a saucer containing the hardened remains of ink previously prepared in the same saucer. This should never be done. The chief secret of the manufacture of ink that will stand the application of colour, is the frequent mixing of a small quantity in a perfectly clean saucer.

We must now ink in the drawings; and if we have proceeded as suggested, we shall do so with confidence, as all our care and attention can be given to doing the work neatly, without troubling ourselves much about other considerations. Throughout, a firm but fine line should be used. Not, of course, too fine to be difficult to see, for we are bound to remember that not everyone who will have to come in contact with the plans is possessed of good eyesight.

As to the elevations, it should be remembered that neatness is not incompatible with any style that is worth adopting. Whether Gothic, Queen Anne, Italian, or any other style, a fine clear line is alike

applicable. We know full well that some will tell us this is heresy, and will argue in favour of a bold thick line in Gothic work.

As to the colouring of the plans, little need be said here beyond this—that the principle should be constantly kept in view, that the colouring is for the sole purpose of indicating the various materials to be employed. As to the colouring of elevations, we are of opinion that it should be slight and transparent, and not too deeply shaded. Elaborate shading and colouring are quite out of place on an elevation. In fact, the whole of these drawings are, or ought to be, purely technical, practical business drawings. It is impossible to make them effective in the way a perspective view may be made effective. They are not adapted for this. Our views upon colouring generally will come by-and-by, when we discuss perspective work. For the present we will leave it. The plans will not be complete without a good deal of explanatory lettering and figuring. Too often these are done in such a way as to be scarcely legible. Avoid all that, and take care that the style of the lettering is such that even the commonest workman shall be able to read it at a glance.

Finally, the whole set of plans should be carefully and most minutely examined. Every care should be

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taken to discover errors, if suspected. Nothing makes an architect look so small as the discovery by a contractor, or worse still, by a workman, of anything like a mistake which can be construed into supposed ignorance of the architect. All are delighted to find their head and chief tripping ; so let him be careful, if he wish to avoid humiliation of this kind.

PERSPECTIVES.

PERSPECTIVE drawing is now an every-day requirement of the architect's office. Scarcely a building is ever erected, however small and insignificant, without one or more being required for the illustration of its design. Nor is this surprising, considering how useful such drawings are, not only to the architect, as enabling him to judge of the effect of his design, but also to the client, who, oftener than is supposed, is wholly unable to form any clear idea as to the appearance of a building by a mere inspection of the plans and elevations, whereas a perspective view is perfectly intelligible to all. It is scarcely necessary to say that no one has a right to consider himself complete and accomplished draughtsman who is not a master of the art of perspective; yet, chiefly we are convinced because of the confused and unpractical nature of most of the works professing to treat upon the subject, and the defective teaching resulting therefrom, comparatively very few can, in any true sense, be said to have thoroughly acquired its theory and practice, though almost every one professes to know it rudi-

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mentally, to the extent of being able somehow to make out something that it might please him to call a true perspective, provided he had a very long time to do it in. Such half or quarter knowledge of the art is, for all practical purposes, useless, for the simple reason that perspective, when required, must in the great majority of cases be done quickly, as well as effectively, or not at all.

The first essential is to obtain a complete knowledge of the principles, really very few and simple in themselves, which underlie the art. Unless this be done at first, mistakes will be of constant recurrence; such mistakes too are not always very easily detected by the untrained eye.

Out of all the multitude of books upon perspective, we know of no single one which entirely meets an architect's requirements. Most of these books treat the subject in connection with painting: so far they are useful; but one and all omit much that would be useful to the architect, and are at the same time redundant with useless and confusing matter. Yet to books we must go for the theory; the actual practice can be learned in a much surer way. Supposing the student to have mastered the rudimentary principles, he must not rest satisfied with the power of applying the rules practically to the extent of being able to put

an ordinary building in perspective, under the supposition that he has now acquired all that is necessary.

After he has done with the books, and obtained from them all he can, he has yet much to learn before he can consider himself thoroughly qualified in the art. He must remember that not a few that he has been taught by the books to be true laws of perspective are not strictly mathematically true.

We could scarcely make our meaning clear upon this point, without writing a treatise on the art. We only mention it with a view to show that, after all, the artificial laws of perspective are to a great extent merely arbitrary, and must not be trusted too implicitly. We must, in fact, fall back upon the eye to a great extent; and this shows how important it is that the eye should be well trained to observe correctly, with a view to arrive at a knowledge of what we will call "eye perspective." In this way every walk through the streets may be made a practical unerring lesson in perspective.

The careful examination of the actual appearance of buildings as seen from different points of view will teach more of real perspective than any number of treatises, however learned. Moreover, by this means, if properly carried out, the student may acquire the really valuable faculty of seeing mentally, as it were

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in perspective, the effect of his designs, when only in the form of geometric plans and elevations. It will further enable him to make "eye perspectives:" that is, freehand perspective sketches of his designs, or portions of them. These will often be found of the greatest service in explaining his intentions to his client.

By experienced persons eye perspectives can often be drawn with a very near approach to accuracy, though in the case of beginners, they will often be very faulty, and should be tested by the ordinary rules. We are not to be supposed to be countenancing such a method in cases where no adequate previous knowledge of theoretical line perspective has been obtained. Drawing from existing buildings, with the distinct view of improving perspective, will very greatly assist the student. It will enable him to dispense with a vast number of unnecessary lines, even when putting a building into perspective in the ordinary way, and so facilitate rapid working.

Whenever large drawings have to be made on comparatively small boards, many find the ordinary form of centrolinead, with its clumsy Y-shape projecting arms, very awkward to work with. A good form of centrolinead is a desideratum; it is much to be wished that someone would give his attention to the perfecting

an instrument of the kind founded upon the principle of the roller parallel rulers, with, of course, rollers of different sizes, so as to admit of the instrument being adapted to required angles. Such an instrument would be much more convenient. The objections to the present form of centrolinead are such, that it is often found preferable to use a very long straight-edge, working on a fixed pivot at the vanishing point attached to a second board; means being taken to keep both boards in exactly the same relative position throughout the progress of the drawing.

In all cases it is well to make a rough eye-sketch of the subject before finally deciding on the position of the point of view, and the vanishing points. If the perspective view is intended to be finished in line, or as an etching, it will not be necessary to draw anything like the whole of the lines in pencil. Much of the detail can as well be drawn in ink at once; though this may be a little difficult and hazardous for beginners. It is of the greatest importance in perspective work, that the drawings should be kept clean while undergoing the pencilling process. The hands, especially in warm weather, should never be allowed to rest directly on the paper, without the interposition of a piece of clean paper. Pencils ought not to be sharpened too close to the drawing. Care

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must be taken to protect it from dust at all times when not being actually worked upon. A good draughtsman can generally be distinguished from a bad one by the condition, in this respect, of his drawing, after he has been at work upon it for some little time.

So much for the mere preliminary drawing. We have now to consider the various modes of finishing a complete perspective view. We will commence with that which, for some reason or other, has enjoyed a greater share of favour than any other for some considerable time past, that is—the etching.

ETCHINGS.

THERE is a wide distinction between the etching proper and the line drawing. Most persons begin by inking in all the architectural lines, i. e. the angles and projections, as in a geometric elevation, and then afterwards commence the actual etching wherever shadows are required. This is quite the wrong way to go about it. From the first it must be recognised that this is not a line drawing, but an etching, i. e. a drawing in which all the effects are to be obtained by shadows, indicated by short rapid touches of the pen.

Here it may be noticed that most inexperienced etchers trust far too much to the mathematical drawing pen. It would be infinitely better were they to use the hand and ordinary pen more.

The result would be much less of the stiff formal effect so often noticeable in etchings. Of course, everyone has not sufficient command of the hand to do this well ; nevertheless, it is the thing to be aimed at. For the same reason, the use of French curves is to be deprecated. Curves should be done by hand,

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and by hand only, wherever practicable; if the draughtsman cannot so do these curves, he had better leave this style of drawing for others who can.

The late Mr. Street, as is well known, made this style a specialty. Some of his drawings are worthy of all praise; others, to which his name is attached, but which, we suspect, were not the work of his own hands, are really very rough. But, on the whole, the student cannot do better than follow his lead in this style.

There is a school of etchers whose productions are positively frightful; some drawings of the class we refer to frequently make their appearance in one or other of the professional journals. They are good as examples of the "how not to do it" kind. Their chief fault, putting aside for the present their extreme coarseness, is the covering of every inch of the paper with a mass of scratchy lines, so that when seen from a short distance, the effect is of one great blurr, complete confusion, exaggerated shadows—distance, sky, and foreground all alike in intensity. Now, no drawing of this kind ever gave the remotest idea of what the building it was intended to represent looked like. How is it possible, when bare wall surfaces, say of plain Bath stone, are shown by a confused conglomeration of irregular lines? As a general rule, there is ten

times too much work put into etchings; that is to say, the shading is vastly too elaborate.

In etchings, skies should be done well and finely, to give the idea of distance, or what is quite as well in effect, the plain white surface of the paper should be left to do duty for the sky. In the latter case, the building will be found to come out all the more effectively for the omission. Etchings are often in name confused with line drawings; in reality, they are very different. The former are not so well adapted for reproduction by the photo-lithographic process: they contain too many lines too closely together; the latter, the line drawing, is excellently adapted for that purpose, and should always be adopted when reproduction by photo-lithography is contemplated.

In drawings of this kind the architectural lines—that is, all corners, angles, &c., as distinguished from the indications of shadows—must be drawn in a clear, distinct, though occasionally broken line; the less shading the better. The lines should be rather fine than otherwise, as they will broaden out under the operation of printing.

Instead of, as is most frequently done, representing the light as falling on one face of the building, leaving the other in shadow, it is much better in drawings of

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this kind, to assume that the sun shines on both faces, so that no part of the building is altogether in the shade. This will render the absence of much shading unnoticeable, as it will not seem to be required. Such drawings come out remarkably well in photo-lithography, the most usual means of illustration adopted by our English professional journals, as well as the cheapest.

WATER-COLOUR PERSPECTIVES.

EFFECTIVE and beautiful as etchings and line drawings sometimes are, they cannot for a moment compare with a really good coloured drawing. The former can never give any real idea of how the building will look when up; the latter may, and ought.

If we come to consider the question a little, we shall soon see why this is so. We are all of us too apt to assume that architecture is necessarily an affair of lines; yet, as a matter of fact, it is literally true to say that there are no such things as lines in a real building. All we see is colour or shadow, and yet how natural it appears to an architect to represent the corner of a building by a line. In a technical drawing this is all very well, but in a drawing primarily intended to represent the structure as it will appear, such lines are out of place. Examine a good architectural photograph, and here, as in the actual subject from which it is taken, not a line can be found. Narrow streaks of shadow very much approaching to a line are often met with, but, of course, these are not

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to be properly described as lines, but rather as narrow shadows.

We repeat then, that if a coloured perspective drawing is intended to give as true an idea as possible of the effect of a building, it must be an affair of colour and shadow. It is not a question of technical drawing as in constructional architectural plans, among which coloured drawings of this kind have no right to rank. It is in short a picture, a water-colour drawing. The more we keep that in mind the better.

We know perfectly well that many architects, especially those of the ultra-mediæval school, do not always accept this view. They insist upon a perspective being lined in throughout, with all details shown, and then having it coloured in such a manner that all the lines show boldly through.

These nondescript drawings are always eminently unsatisfactory: neither one thing nor the other. A late distinguished architect, hailing from the neighbourhood of Spring Gardens, was very fond of insisting upon this; once, in the case of a very large drawing which had taken months to draw and line in, at his own offices, and which was afterwards sent to an artist to be coloured, he was horrified to find, on paying a visit to this artist's studio, with a view to give his final instructions as to colouring, that water and sponge

were being freely used in almost obliterating all the black ink lines, leaving them little darker than ordinary pencil lines. His first impression was that the drawing was completely spoilt, and he expressed himself to that effect rather strongly ; but the artist was equal to the occasion, and thoroughly succeeded at last in convincing him that the lines ought not to show in pictorial perspectives.

In perspectives the general effect is the chief thing, the detail is a matter of quite secondary importance. Very much of the time taken up in laboriously lining in all the details before colouring is simply wasted, or worse than wasted. Under successive washes of colour almost all small details disappear. It is much better to omit them at first ; the surface of the paper will be less disturbed by unnecessary lines. Of course a good deal depends upon the exact purpose for which a drawing is intended ; but in nine cases out of ten, what is required in a good coloured perspective is simply a pleasing picture representing truthfully the appearance the building will have when completed. We will suppose such a drawing in progress, and offer such hints as we think necessary.

The paper selected should be of a slightly rougher texture than that used for ordinary drawings. It must be carefully stretched, otherwise the expansion and

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contraction of the paper caused by change of temperature will result in a buckling-up, productive of much inconvenience. The outline must be drawn in with a pencil not unduly hard, so as not to necessitate digging into the surface of the paper.

As we have said above, it is simply useless to burden the drawing with a lot of small detail at this stage; it would inevitably be hid out of sight by the colouring. It is very important to remember that the lines are only intended to be a guide for the colourist: all the visible work will have to be done by the brush. If we bear this in mind throughout, we shall save a great deal of trouble and useless labour.

The greatest care will have to be taken while this is in progress, to prevent the drawing becoming soiled. In damping the paper previously to commencing the colouring, care should be taken not to rub the surface with a sponge. It is better to slant the board and pour the water gently over it; this done, allow the board to stand on end, for it to drain off.

There is something to be said in favour of a thin wash of yellow ochre over the surface of the drawing, but, as this is nearly always overdone, it is perhaps better to omit it altogether, and trust to the pure white of the paper for a ground to work upon. Had the lines been in ink, instead of in pencil, this opera-

tion could scarcely have been performed without a considerable amount of the ink being washed off, and, in a diluted state, sinking into the surface of the paper, thereby deadening the tint to a serious extent, and affecting the whole of the after-work. Almost the same thing may be said of even the so-called indelible brown ink, which, though better than the black, in some respects, yet is never perfectly indelible; it has also another objectionable quality: it works much like ordinary writing ink, and is apt to blot readily, and is, moreover, very unequal in strength and colour.

There are several reasons for preferring the cake colours to the so-called moist colours; the latter, from their very nature, are much more liable to receive tinges of other colours, to say nothing of dirt and dust, which they gather in abundance. Everyone knows he ought not to use a brush containing one colour in order to take up a portion of colour from another, and so cause its contamination; but then everyone does so when using moist colours, and the temptation is so great as to be almost irresistible, though, of course, this renders the tints anything but pure. For this reason chiefly we would strongly advise the use of cake colours. The brushes ought to be the best sable. Camel-hair have no substance, and soon get limp and worthless.

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Though it will be necessary, for the sake of order, to take separate portions of the drawing into consideration at a time, we wish strongly to impress upon the reader the importance of proceeding with all parts of the drawing simultaneously. This caution is necessary, as very often an attempt is made to almost finish the sky and extreme distance before beginning to work upon the building or foreground. This will never lead to any very satisfactory result. There will be a want of harmony between the several parts. As a general rule, the least successful feature in an architectural perspective is the sky. So few are able to do this well.

Most of the elementary books on water-colour painting have a good deal to say upon skies, but in connection with the subject they give very often much bad advice. For example, they one and all seem to have in view a flat graduated blue sky, the colours to be laid on very thin in successive coats, and then washed over a number of times with water until a perfectly smooth surface is obtained. All this is misleading, and very bad advice. It cannot help but produce a miserably tame effect, and the constant washing over with water will have pulpified the paper to some extent. Our advice is, avoid by all means this washing-over process.

Many adopt this method for the purpose of partially obliterating portions of the work with which they are dissatisfied. Now, in our opinion, it would be vastly better to begin the drawing all over again, rather than have recourse to this slippery means of remedying defects. It is scarcely to be expected that anyone should be able to put in a good perspective sky without a certain amount of direct study of the skies Nature herself is in the habit of painting. Indeed, this is the only way of acquiring the art of putting in, not only skies, but middle-distances and foregrounds, and the accessories generally, which in all pictorial perspectives play a very important part, and should be done well, or the building, the main object of the picture, will be sure to suffer. Instead, therefore, of trying to get the knowledge and practice at second hand, let the reader provide himself with a box of colours and other sketching paraphernalia, and go boldly to Nature herself for the instruction of which he is in need, sketch skies as he sees them, skies serene and skies cloudy, using the brush only, and getting in the effects with special reference to rapidity and truth, and very little to neatness. Even such bits of work will look bad enough at the best, compared, out in the open, with the real sky overhead; but depend upon it, bad as they may be, they will most

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decidedly be ten times better than the skies manufactured out of the artificial elements of the books on painting.

Having achieved some amount of dexterity in sky effects, let attention be given to distance and middle-distance. Imitate them as nearly as possible; pay special attention to the effects of aerial perspective. It is not our province to indicate the precise colours required to give the effect of distance. This information can easily be obtained from any of the rudimentary treatises on water-colour painting; but we would direct particular attention to the immensely different effect of colours nearly alike in appearance and in intensity. With some blues, for example, it is simply impossible to give the effect of distance, while a light tint of cobalt is sufficient to suggest infinity of space. With the general properties of colours, in this and other respects, the reader is supposed to have made himself acquainted.

Foliage has so frequently to be introduced as an adjunct to drawing of the kind we are considering, that it is of vital importance that it should be drawn well. In this, as in the matter of skies, we see no other way but the patient and close imitation of Nature. We are thoroughly convinced that an hour's direct observation of a group of trees, and careful

endeavour to reproduce them with the brush, will do more than a week spent on elementary drawing treatises.

It must be carefully borne in mind that breadth of effect, and general truth, are of vastly more importance than mere accuracy of detail, in representation of leaves and branches. The latter, it is to be supposed, the draughtsman will have obtained the power of drawing with the utmost exactitude, by his study and practice of freehand drawing, when necessary, but for our present purpose it is not necessary.

The whole time should be given to grasping the general character and appearance of the foliage. This will lead to the attainment of the power of representing foliage quickly in the mass, and by few touches ; the fewer the better.

An architect is much too apt to carry into perspective work, methods and practices well enough adapted to ordinary geometric technical drawing, but wholly unsuitable for works of a more distinctly artistic character. One of these tendencies consists in endeavouring to get effects too much by general flat tints. For instance—he sees that one side of a building is in shade ; forthwith he goes and lays on a wash of some neutral tint, thinking thereby to obtain the true effect of shadow. This is entirely wrong.

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Shadows and light alike are, in nature, infinitely varied for those who have eyes to see such variations.

It is almost hopeless to expect anything artistic from those who are mentally or visually incapable of perceiving such niceties of variation.

But there are those who, knowing all this, practise the method of broad washes, under the mistaken idea that it is the more rapid. In reality, it is nothing of the kind; for it will be found to require so much additional work upon the flat grounds, that in the end it will be far the slower way of working.

Another fault of beginners is to put in all the sunny part of the picture first, and reserve the dark till last. Now, this again is only a kind of survival of the elevation tinting style, and will never lead to good result. As we have said above, in reference to the picture as a whole, so we say now of the main central feature of it, the actual building—take, so far as it is physically possible, the whole in hand at once. Besides the reasons we have already given for doing this, there is another and a very important resulting advantage from working on this principle, and that is, we shall be infinitely better able to judge of the effect of the whole of the drawing, as well as of its parts, than by confining the attention too long to one feature, by which the eye gets fatigued and incapable of judging truly.

It may be well to insist upon another very important point indeed, as it is too often lost sight of. The essentially distinctive and special feature of a painting in a water, as distinguished from an oil medium, is, or ought to be, *transparency*; though just now there is a strong tendency (a mere fashion, one may hope), among water-colour artists in favour of body colour, scarcely distinguishable from oil painting. Such pictures are, and must ever be, entirely deficient in the chief beauty of a water-colour painting—*transparency*. If, in general water-colour painting, *transparency* is to be considered a *sine quâ non*, still more is it needed in drawings such as those of which we are here speaking, which have in nearly all cases to be done in haste, and should therefore show no signs of anything like a laboured style. We must start with the determination to put all our dependence upon transparent colours, and endeavour to forget the existence of such a thing as Chinese white.

Everyone admires a clear, sharp drawing; this can only be obtained by a decided manner of going to work. Not too much colour should be taken up by the brush at a time, and that colour, if a compound, continually varied. This can best be done by having a quantity of each component tint prepared in separate saucers, and then forming the amalgam by dipping the

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tip of the brush into each, and mixing by a rapid turn or two in another palette, each time the colour is required. In this way variety of tint will necessarily be produced, and therefore flatness avoided.

Think so long as may be necessary in order to avoid mistake, before each touch ; but when once the brush has left its mark, do not seek to alter it by too much fining down and smoothing over, or the effect of crispness and apparent rapidity of touch will wholly vanish. If, after working upon it for some time, any one part of the drawing has become saturated, it should be left for a time, as one of the secrets of the art of crisp decided colouring is the laying of each successive tint on a dry ground.

The habit of working upon the paper while damp is certain to produce a heavy flannelled effect, the exact opposite of what we wish to obtain.

Perhaps nothing on the surface of this wide earth is so insipid, and so devoid of interest or of beauty, as the flat surface of a stucco wall recently painted ; compared with an unpainted stone wall of the same extent, it is tameness itself. In the former we have one monotonous flat tint, suggestive of nothing but meanness ; in the latter, tints infinitely varied and often interesting and beautiful. The consideration of this will at once enable the reader to understand why we lay so much stress on the avoidance of the flat wash style of colouring, to which, as we have said, there is ground

for thinking, architects are rather prone, owing to the habit acquired from the practice of so tinting elevations and other more strictly speaking architectural drawings. Microscopic accuracy of detail should never be looked for in a perspective. If the architectural critic wish for information of that kind, he should examine the plans, elevations, and detail working drawings, where he may reasonably expect to find them depicted with the utmost accuracy. But though this is so, and though our perspective is mainly for the purpose of suggesting the general appearance and effect of the complete building, we must not be supposed to mean that such detail as is shown should be carelessly and inaccurately drawn. Very far from that, we wish strongly to insist upon accuracy everywhere; our protest is against the introduction of a mass of minute, finical detail, not only because it is confusing and destructive to general effect, but for the still sounder reason that in the case of an actual building, seen at the distance from which our drawing is represented as taken, all such minutiae of detail would be invisible. A few touches towards the close of the work, sharply put in in the deeper recesses, will enable us to get any amount of precision.

One thing is very frequently lost sight of, and that is, the ever-varying degree of intensity in shadows. Nothing will teach this so effectually as the close

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observation of the shadows on existing buildings. Indeed, just as, for the study of skies and foliage, we have sent our readers to Nature herself, so in the matter of shadows and variations of tint we would refer them to the actual constructed works of the architect, a careful critical study of which, from the pictorial point of view, will teach much that cannot be conveyed by written instructions.

We are strongly averse to the introduction of many figures into an architectural perspective, because, if too numerous, they always appear to be intended to draw the eye away from the building, and are therefore somewhat suggestive of defects desired to be hidden; a few such figures, however, will be necessary, if only to supply the observer with a scale wherewith to measure the size of the structure. Such as are introduced should be drawn well, and of their true perspective size, or their utility for purposes of size comparison will be lost. Sometimes, indeed one may say, very often, they are intentionally made smaller than their true size, with a view to increase the importance of the building; but this is a despicable trick, and should always be avoided.

If, on completion of a drawing, it appear cold, or flat (though it is difficult to think how it could be either the one or the other, if the colourist have proceeded upon the lines indicated above), recourse must


never be had to any wholesale glazing process, with a view of warming it up; in this way good drawings are very often spoiled. It is generally better to leave the thing alone entirely; but if defects of the kind really exist, they must, indeed they can only be remedied in one way, and that way is the adding of a little local colour and intensifying of shadows here and there, where thought needful. Even this cannot be carried far without serious result. To avoid the necessity of all such patching-up is most desirable, and not difficult, if we follow the rule to think well before every stroke, and then proceed with the full intention of avoiding anything but finality in our work.

Here it may be well to remind the reader that an artist is very rarely —perhaps we should rather say, never —wholly satisfied with his own work; it may therefore often happen that though the colourist thinks he sees much reason for dissatisfaction with his own production, and consequently feels tempted to alter and improve it by some such rapid and general process as that hinted at above, yet in reality the defects may not really exist, or if existing, not to the same extent as he supposes. He will therefore, on this ground as well as the other, do well to think twice before running the risk of making worse, rather than better, that which in itself may be, as it stands, quite satisfactory. Of course this is not meant to countenance satisfaction with

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mediocre work, but rather as a well-needed reminder to artists, who often do not know, what it is of the utmost importance they should know, viz. when to stop.

Drawings in monochrome are a frequent requirement, and are susceptible of very effective treatment; whether in sepia, Indian ink, or neutral tint, they afford the architect, perhaps, the most rapid means of all, of illustrating his design, not so perfectly as a coloured drawing, still with a sufficient approach to truth to render great service to him in many ways. Moreover, they are likely to be in still greater request for purposes of reproduction by the ink-photo process, for which they alone are properly adapted. The outline should of course be in pencil. Little or no attempt need be made to deal elaborately with surfaces on which the light falls directly: these should, to a very large extent, be left untouched; the tint being applied almost entirely to the representation of shade. In fact, it should be distinctly remembered that the whole thing is an affair of light and shade, the former to be represented by the white of the paper, and the latter by the tint employed. No attempt must be made to give a too finished or complete effect to a monochrome; they are essentially of the nature of sketches, and should be treated as such.



COMPETITION DRAWINGS.

MUCH that we have said above upon architectural drawings generally, is equally applicable to competition drawings; but there are, or should be, many things in which they differ, and though these are not perhaps very important, it is well we should point them out.

We must now remember that our work is not so much intended for professional inspection, and technical use, as for the illustration of the scheme and design of the architect in such a way as to be readily understood and appreciated by persons for the most part devoid of technical knowledge.

It will therefore be our first endeavour to simplify, in every possible way, the drawings which are likely to be most unfamiliar to persons of the class who, as members of the building committee, will have the control of the selection of the plans.

We are bound to confess that this necessarily involves a certain amount of working down to a lower level to meet what we conceive to be the lower intelli-

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gence of our judges, but this is inevitable. A great deal of minute detail may be omitted from the plans, and special attention given to making the leading arrangements obvious and unmistakable.

It is one of the necessary evils of the competition system, that architects are obliged to follow, not what reason, experience, and taste tell them will be best, but rather what will, in their judgment, be most likely to please those whose office it may be to adjudicate upon their plans. These persons may be, and as a fact often are, quite incapable of forming a just judgment upon an architectural design: they may be utterly devoid of taste, and quite innocent of technical knowledge even in its most rudimentary forms; yet to them has been appointed the task of sifting the relative merits of numerous sets of complicated plans, of the precise meaning of which they have little conception, and therefore completely fail to appreciate the labour and skill bestowed by the designer in overcoming difficulties arising from site, from special requirements, from insufficiency of funds, and other causes.

Considerations of this kind will not affect the design alone, but also, to a considerable extent, the drawings too. In the great majority of cases, appeal must be made to the *eye*, rather than to the under-

standing ; to *both*, if possible, but to the former rather than to the latter, if success be our object. Of course, the same principle must be followed in the preparation of drawings intended for competitions as in the case of drawings prepared for purposes of exhibition, or in the ordinary course of business ; but those principles will have to be applied in a different manner.

A more showy and brilliant style of colouring than strict good taste might warrant, will often be found needful : effects striking and obvious aimed at ; plain wall surfaces, so valuable, as every true architect knows, as a foil to richly decorated features, obliterated, and as much cheap ornamental detail as possible introduced. All this may be, up to a certain point, permissible ; but we cannot refrain from saying that architects are often tempted to sacrifice too much to the shrine of vulgarity and bad taste. Some limit should certainly be set to this pandering to the ignorance and lack of taste of building committees. Respect for himself and for his art will usually mark that limit plainly enough to the architect. Much indeed might be said upon the influence of the competition system upon architecture as an art, but it is no part of our purpose to deal with such a question here, as our concern is wholly with the drawings.

We do not think we have much underrated the

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attainments and qualifications of the average committee of selection. If there were room for doubt on the subject, we could supply instances, almost without number, evidencing almost incredible incapacity for the duty thrust upon them by circumstances wholly outside considerations of fitness. It is, however, important to remember that complete incapacity of this kind is much rarer than formerly, and tends to give place to a fair standard of intelligent artistic taste. Much more interest is shown now by the public in the designs of their Public Buildings, and, as a consequence, the general level of artistic intelligence in committees of selection is also on the rise.

Now and again, too, we find in such bodies a minority, small it may be, of men with much higher qualifications than the rest, to whom the other members have the good sense, knowing their own weakness, to defer in matters of taste. All this goes to show how extremely unwise it is to encourage that feeling of contempt we are sometimes led to entertain for our judges. Far safer will it be to err on the other side.

The whole of our remarks tend to this : that as a general rule, no architect can, consistently with his own interest, afford to submit in competition anything less than the very best and most perfect set of drawings

he is capable of producing ; and to that end all means which art and skill can suggest should be pressed into service.

Very special attention must be given to the perspectives : they will have to bear the brunt of the fighting. They must not only be good, but as numerous as may be necessary in order to thoroughly illustrate the design and present it in its most attractive lights.

When the choice is free, it is always better to trust to *coloured* perspectives ; they are at once the most easily understood, and the most pleasing to the unprofessional eye. Of course, perspectives are not everything in competitions, but it is not necessary to say much about the geometrical plans, as, so far as the actual drawing is concerned, they will differ little from those required for contract purposes ; though, having regard to the necessity for plainness and intelligibility, it may be well to omit many indications of details of construction, to black in with Indian ink, instead of colour, the walls on plans and sections, and to make the explanatory writing large, bold, and legible. The elevations should in no case be elaborately got up ; however much time may be spent upon them, they can never be made to rival or supply the place of perspectives.

ARCHITECTURE AND GOOD DRAWING
INSEPARABLE.

THERE may be some among our readers who think we are disposed to attach rather too much importance to good draughtsmanship, and to require for it an amount of study and attention out of proportion to the advantages resulting from it. Some justification of our position may therefore be considered necessary.

There are those, among them many well-known art critics and writers on architecture, who are never tired of telling us that in the ages when architecture was most flourishing, anything like accurate geometric drawing was unknown, and even go so far as to reason from that, that there must be something actually antagonistic in the one to the other. It is perfectly true that very little direct evidence has come down to us, as to the means adopted by the original architects of our great cathedrals and churches of the mediæval period, in draughting their designs; but we have amply sufficient to enable us to say with confidence, that the drawings employed were of a *character* greatly superior to what is generally supposed.

It is well known that the cathedral of Cologne has been completed from the original design, still in existence, though dating from the fourteenth century. An exact copy of this old design for the Western towers may be seen at South Kensington Museum. As a drawing it is in some respects faulty, in that portions of the spire and other features are partially in perspective, although the apparent intention has been to produce an elevation.

Notwithstanding this, and other minor faults, it is impossible to deny that the artistic skill and care, and minute attention to detail, with which this drawing has been prepared, are worthy of all praise, apart altogether from the beauty of the design. This is by no means the only drawing of the kind in existence. We have, for instance, the very similar one of the cathedral of Ulm. Even if it stood alone, it would be sufficient, one might suppose, to cause the critics to whom we have referred to pause before again enunciating the doctrine that the great structures of early times were evolved directly by a kind of artistic instinct from the brains and hands of the actual artificers engaged in their erection, without the aid of anything in the least approaching to our idea of a strictly geometric plan, or elevation.

We think there is fair reason for supposing that the

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general mode of procedure was this:—The plans and elevations were drawn on parchment, apparently almost entirely by hand, without the help of instruments of any kind beyond the ordinary quill writing-pen, a rough pair of dividers, and a ruler of some kind.

Though not drawn to scale, in our sense of the term, there was a considerable approach to proportional accuracy, the eye alone being the guide in this respect. We believe that all the actual working drawings were drawn full size, and with every possible regard for accuracy. If we consider for a moment, we shall see how utterly impossible it would be, even to set out the plan of a great cathedral, on the levelled surface of the ground, without making what really amounts to an actual full-size drawing of the plan upon the ground. Though on a larger scale, exactly the same operations would have to be performed as in the making of an ordinary plan on paper. The careful spacing out of piers and buttresses could not have been done without a complete knowledge of projection. Our contention is, that men who could do this cannot be said to have been ignorant of drawing.

The working drawings for mouldings, tracery of windows, ribs of groining, &c., would be drawn, full size of course, on a boarded or stone floor, so that the masons might work directly from them. This would

often involve drawing of the most intricate and difficult kind, such as, probably, not one architect's assistant out of ten would find easy.

Imagine what accuracy and skill would be required in preparing such drawings for, say—the groining of roof of Henry the Eighth's chapel, or of King's College Chapel, Cambridge. It will not do to tell us that each mason was himself the author of the drawing, worked out on his own block of stone, as he went along. This could not possibly have been the case in constructional masonry.

Concurrence on the part of a great number of men was needful: this could only have been brought about by having some general standard or plan to work from; it would be nothing short of miraculous, if a number of men, each working independently, produced such works as those to which we have referred.

Of course, this reasoning does not apply to those who executed the less mechanical and more artistic portions of the work—foliated capitals, statuary, and all the smaller features—where, without injury to the general effect, a mason carved as fancy and skill suggested. It is almost certain that for such artistic carving no drawings were made; all was dependent upon what we should now call “the art workmen.” Hence the ever varying designs of such details found in all our great churches.

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How anyone can suppose it to have been possible to have executed such great works as Ely, or Westminster, without the most careful and painstaking preliminary draughtsmanship, we are quite at a loss to understand. The fact is, our architectural forefathers could draw, and did draw accurately and well, if not on hot-pressed drawing paper, certainly on parchment, on wood, and on stone, or the great structures of which we are all so justly proud would never have come into existence.

As we emerge into the period of the Renaissance, we find a vast accumulation of testimony to the care and attention bestowed by all the great architects of the time upon their drawings. It was felt to be impossible to reproduce the architecture of Rome or Greece, without a return to those principles of pure geometrical design so strikingly apparent in the works of the ancients.

Here it may be permitted us to pause, and ask those who may say we make too much of drawing in architecture, whether we are not asserting a self-evident truth when we say that not one of the great works of classical architecture, whether Greek or Roman, could ever have existed without the previous application of the principles of exact geometric drawing? They at any rate, whatever may be asserted of Gothic work, could not have been done in the

wonderful, half-miraculous, half instinctive, rule-of-thumb manner which some are so fond of extolling.

The numerous elaborate treatises on geometry and perspective which appeared almost contemporaneously with the revival of the arts in the fifteenth and sixteenth century in Italy, bear evidence to the belief that then prevailed in the artistic world, to their practical necessity for the furtherance of the onward movement of modern architecture.

Even if we were not able to produce such strong testimony in proof of our position that high architecture and good drawing have ever been inseparable, it would still be no argument to say that because others in the past drew carelessly or imperfectly, therefore should we. Whatever the conditions may have been, under which large buildings were erected in remote ages, it is quite certain that those which prevail in the present day demand, at any rate, if not high artistic skill, certainly all the accuracy and neatness of which the draughtsman, by careful study and persistent practice, can avail himself. No more, we are convinced, need be said in justification of the stress we lay on the necessity and advantage of the attainment by the architect of the very highest degree of excellence in drawing of which eye and hand are capable.

CONCLUDING HINTS.

It may be useful to suggest a few means, other than actual drawing, by which the intellectual and artistic faculties most conducive to excellence in the draftsman's art may be cultured.

Chief among these we rank the critical observation of those great works of the Venetian school of Italian seventeenth and eighteenth century painters. We do not mean that we shall here find the precise requirements of the nineteenth century drawing-office, but what we shall find are perfections of truthful and pleasing representations of Venetian and other buildings from which we may glean much indeed.

It may be objected that such oil paintings have little in common with architectural drawing. To this we reply, that the principles upon which both are based are essentially the same, and that as, just at the present moment, we are only dealing with principles, we can as well derive our instruction from a painting in oil as from any other drawing. Foremost among Venetian painters of the kind we speak of is Canaletto, and we propose to direct attention to several of his

pictures, strictly confining ourselves to such as are easily accessible to the student at the National Gallery: "Regatta on the Grand Canal, Venice," "Piazzetta of St. Mark," "The Ducal Palace," "A View on the Grand Canal," "A View in Venice," "Scuola di San Rocco."

All these pictures will repay the most careful scrutiny. They show how an artist, guided alone by his own natural artistic instincts, as distinct from the narrower arbitrary traditions of the school of professional architectural drawing, succeeded in portraying with marvellous fidelity, the architectural monuments of his native city, and how this could be done in the simplest and most natural manner, with the least expenditure of manual labour; for there are no signs of a too-studied attention to detail, nothing is laboured, nothing is overdone, the simplest means have been employed to effect the end in view. All these are characteristic of the true artist, and are worthy of the utmost attention and study.

We have also in Francesco Guardi another great Venetian painter, one whose architectural works may most profitably form the subject of our careful study; though, it must be admitted, they lack something of that clearness of definition which we find in all Canaletto's paintings.

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We would direct special attention to his "View of Church, Campanile, and Piazza of San Marco," and to his "View in Venice." Antonio Cornale's "San Pietro di Castello" and "On the Canal Reggio" are also worthy of the closest examination. While we are in the National Gallery, it will be well to cast a glance at that wonderfully realistic picture by the Dutch artist, Dirk Van Deelen, called "Architecture of the Renaissance." An inspection of some of the half-finished water-colour drawings in the Turner Gallery will be of great service. At South Kensington Museum there is a remarkable series of Italian coloured drawings chiefly representing brick and terra-cotta architecture of the fifteenth century. They are exquisitely beautiful, and worthy of the most careful study.

A permanent gallery, devoted to the exhibition of architectural drawings, ancient and modern, arranged with every regard to the rigid exclusion of all but those of the highest merit, would be of great service to the student of architecture.

When we consider the number of museums in our midst, it is not a little remarkable that nothing of the kind has as yet been instituted. At South Kensington are many valuable drawings well adapted to form the nucleus of such a museum. To these would be added the best drawings procurable of the English and

Continental Schools of modern architecture; giving special attention to the selection of those of a truly technical, as distinct from a pictorial character.

In connection with such an institution might be organised an annual exhibition of contemporaneous architectural drawings, based on the same principle, viz., the determined refusal to accept contributions as exhibits, merely because they may have proceeded from some well-known office, or for any other reason than that of intrinsic merit.

True, it may be said that we already have an annual exhibition of architectural drawings at the Royal Academy: that is so, but it altogether fails to meet the case; it is not sufficiently technical and architectural, to be of much service. Few drawings that are not of a strictly pictorial type have any chance of being hung. In such an institution as we are contemplating, every effort would have to be made to place the direction and management in the hands of those who would not suffer themselves to be tempted to use their powers for the propagation of the views of a clique, and so narrow its influence.

Another feature of utility might well be added, viz., an annual international loan exhibition of architectural photographs. Such an exhibition would be of incalculable service, especially to those whose

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means do not permit extensive travelling, to view the great monuments of architecture in other countries.

As a concluding hint, we will take leave to suggest to the Science and Art Department that South Kensington would be a suitable home for such an institution, and that by affording all reasonable facilities for its inauguration, they would be rendering substantial service to the oldest and the noblest of the arts—that of architecture.

FINIS.



